NOVEMBER/DECEMBER 2024

23PEPH24C — ADVANCED OPTICS

Shanmuga Industries Arts & Science College T.V.Malai

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Explain the Malus law.
2. What is optical activity?
3. Differentiate between spontaneous and stimulated emissions.
4. Write the application of semiconductor laser.
5. What is an optical fiber?
6. Define total internal reflection.
7. What is "Self focusing light"?
8. Define the principles of harmonic generation.
9. What is Faraday effect?
10. What is Pockels electro effect?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) What are "Quarter wave plates"?

Or

(b) Describe the polarization by double refraction.

12. (a) What are the components of the laser?

Or

(b) Explain the working of a Ruby laser.

13. (a) Differentiate between single and multi mode fiber.

Or

(b) Write a note on parabolic index fibers.

14. (a) Write a note on "Harmonic generation".

Or

(b) How does second Harmonic generation works?

15. (a) Differentiate between Zeeman and Inverse Zeeman effect.

Or

(b) What is Cotton-Mouton effect?

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain application of polarized light in optical activity.

17. Give details on :

(a) He-Ne lasers

(b) Co laser and its applications.

18. Describe the application of fiber-optic sensors with precision displacement measurement.

19. Explain the concept of "Third Harmonic generation" in detail.

20. Explain the concept of stark and inverse stark effect.

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